DOCUMENT RESUME

ED 196 298 FL 012 071

AUTHOR Merkin, Susan; And Others
TITLE Discourse Factors in the Acquisition of Wh-Questions. Papers and Reports on Child Language Development, Number 19.
INSTITUTION Stanford Univ., Calif. Dept. of Linguistics.
SPONS AGENCY National Institutes of Health (DHEW), Bethesda, Md.; National Science Foundation, Washington, D.C.
PUB DATE 80
NOTE 10p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Child Language; *Connected Discourse; Discourse Analysis; Infants; *Language Acquisition; Language Research; Longitudinal Studies; Psycholinguistics
IDENTIFIERS *Questions

ABSTRACT

The spontaneous speech of seven children was monitored for "wh" questions. The children were observed longitudinally from about age 24 to 36 months. The pattern of development with regard to the deletion of non-obligatory verbs revealed that "what," "where," and "who" questions presented increasing verb ellipsis, while "how" and "why" questions presented an expansion of utterance length. "Why" questions, which were characterized by an abundance of descriptive verbs, exhibited the greatest verb cohesion and linguistic contingency, indicating that the source of linguistic contingency was the verb relation in the prior adult utterance. A large number of descriptive verbs also occurred with "how," but "how" showed the least verb cohesion, indicating that the children were not depending only upon the linguistic context for the source of their use of descriptive verbs. It appears, then, that shared verbs in discourse is only a part of the explanation of the differential occurrence of descriptive verbs with "wh" forms. It can be assumed that the use of descriptive verbs is also a function of the meaning and structure of the different "wh" forms themselves. (JB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Stanford Univ.
Dept. of Linguistics
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

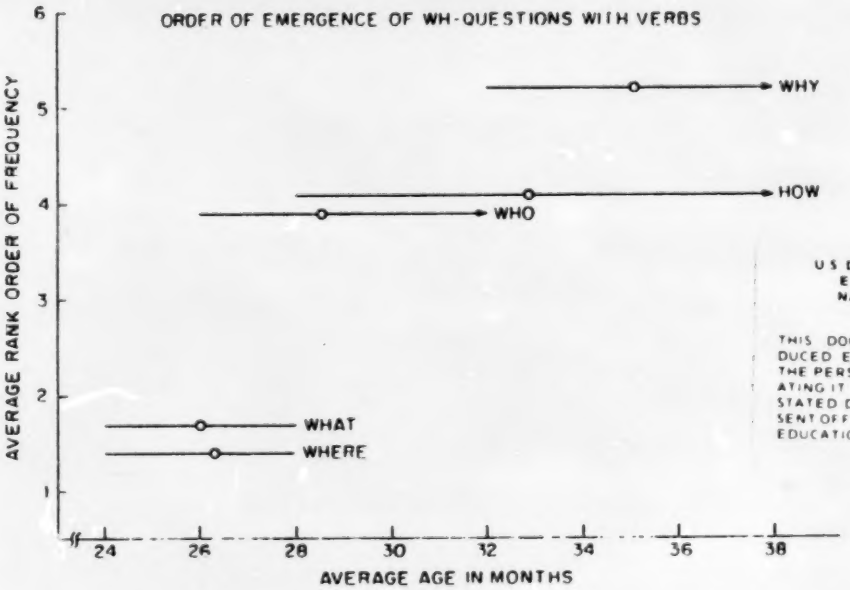
ED196293

Discourse Factors in the Acquisition of Wh-Questions[1]

Susan Merkin, Janet Wootten, Lois Bloom
Teachers College, Columbia University

The sequence in which children learn wh-questions forms has been explained most often in the child language literature as resulting from constraints on cognitive development (e.g., Smith, 1933; Ervin-Tripp, 1970 and Tyack and Ingram, 1977). In the last several years we have been exploring the acquisition of wh-questions and have observed that there are important linguistic and discourse constraints operating as well. In an earlier paper (Wootten, Merkin, Hood and Bloom, 1976) we reported the sequence of emergence of wh-question forms by four children and demonstrated that both the syntax of the questions and the semantics of the verbs used in these questions covaried with developmental sequence. Further investigation of three additional children has now confirmed the results found with the first group (see Methods section below), and the emergence of the most frequent wh-forms for all 7 children, what < where < who < how < why, is presented in Figure 1 below in terms of average rank order of frequency and average age of emergence. (An arrow in Figure 1 indicates that question was not productive for one or two of the children.)

Figure 1



U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

[1]The research reported here was supported by Research Grants from the National Science Foundation and the National Institutes of Health.

FL012071

With respect to the relationship between syntax and sequence of emergence, what, where and who functioned as wh-pronominals that ask for the major sentence constituents they replace. In contrast, why and how, which emerged later, do not replace major sentence constituents, but ask for information pertaining to the semantic relations among all the constituents in a sentence. With respect to the relationship between semantics of verbs and order of emergence, the more general pro-verbs (the copula, do, go, happen) showed a different pattern of distribution across the wh-forms from the semantically more complex descriptive verbs (e.g., ride, break, sleep): (1) what, where and who occurred most often with pro-verbs, (2) why occurred most often with descriptive verbs and (3) how occurred equally with verbs of both categories. This distribution is presented in Table 1 for the wh-questions overall, and developmentally in Figure 2, according to Brown's (1973) Stages II through V.

Table 1

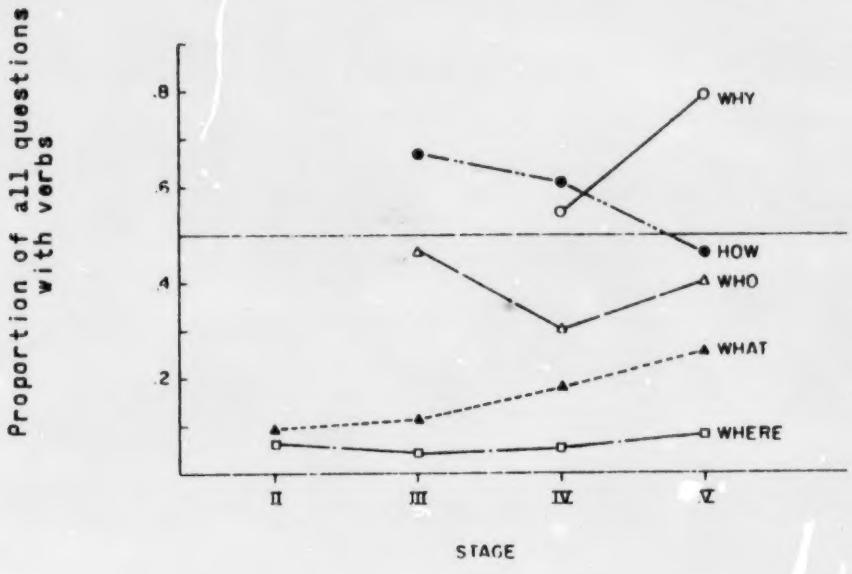
DISTRIBUTION OF DESCRIPTIVE AND PRO-VERBS

	WHAT	WHERE	WHO	HOW	WHY	WHICH	WHEN	WHOSE	TOT
PRO-VERBS	2323	2010	165	69	80	10	4	7	4668
	(.854)	(.938)	(.632)	(.489)	(.252)	(.417)	(.308)	(.778)	(.83)
DESCRIPTIVE VERBS	397	131	96	72	238	14	9	2	959
	(.146)	(.061)	(.368)	(.511)	(.748)	(.583)	(.692)	(.222)	(.17)

The present paper is concerned with the use of wh-questions in discourse and will report the results of three discourse analyses with all seven children: the first analysis concerns systematic verb deletion within a wh-question; the second explores the linguistic contingency between a wh-question and its adjacent linguistic context and the third examines verb cohesion, or the use of verbs repeated from a prior adult utterance. In general, different patterns of discourse adjustments and contingency were expected among the different wh-questions, reflecting differences in their forms, functions and sequence of emergence.

Figure 2

USE OF DESCRIPTIVE VERBS: PROPORTION OF ALL QUESTIONS WITH VERBS WHERE VERB IS DESCRIPTIVE



METHODS

This report is based upon an investigation of approximately 8,000 wh-questions asked by 7 children in informal play sessions with their mothers and/or a familiar adult. These children were observed longitudinally from about age 24 to 36 months, at intervals of from three to six weeks. The data were audio-recorded and the transcriptions that were used for the analysis of discourse include the complete linguistic context (the speech of others) and descriptions of relevant non-linguistic context. Although there was individual variation among the children, they were essentially similar to one another, so that the data could be combined in reporting these results. The pooling of data was based upon MLU according to the stages described by Brown (1973), and average MLU at each stage was 2.14, Stage II; 2.83, Stage III; 3.45, Stage IV; 4.58, Stage V.

ANALYSES AND RESULTS

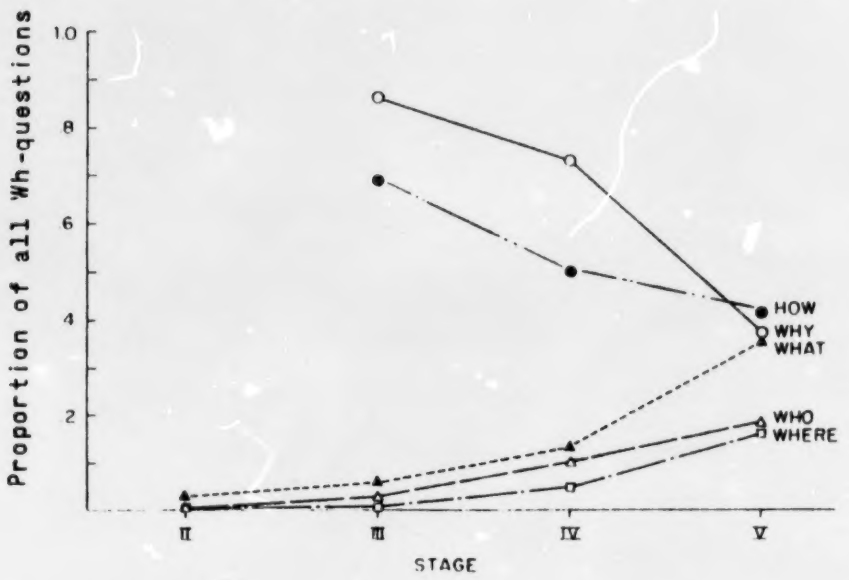
Verb Deletion. Wh-questions without verbs accounted for .28 of the children's questions overall and were of two kinds: (1) incomplete questions in which a verb was obligatory in the adult model but was not used in the child's utterance, for example, "what that?" or "where dog?", and

(2) questions in which a verb would not be expected, for example, the single-word "why?" or "what?", and multi-word questions such as "what book?" in response to such an utterance as "Give me the book."

We expected that questions without verbs would be more frequent in the early samples and would decline as the children learned to use more different verbs. In fact, the children did learn to use more different verbs over time, but there were, moreover, clear developmental patterns in the systematic deletion of verbs in discourse contexts. Across all wh-forms, incomplete questions in which an obligatory verb did not occur decreased between Stages IV and V as utterance length increased, and as the children learned more of the formal requirements for asking questions. At the same time, there was what appeared to be a gradual increase from Stages II to V in the occurrence of questions without verbs, where the verb was not obligatory. Closer examination of non-obligatory verb deletion for the individual wh-forms, however, showed an increase over time only for what, where and who (the most frequent question that the children asked). In contrast, the occurrence of how and why questions without verbs, where the verb was not obligatory, showed a decrease over time. This result is presented in Figure 3.

Figure 3

VERB DELETION WHERE VERB IS NOT OBLIGATORY

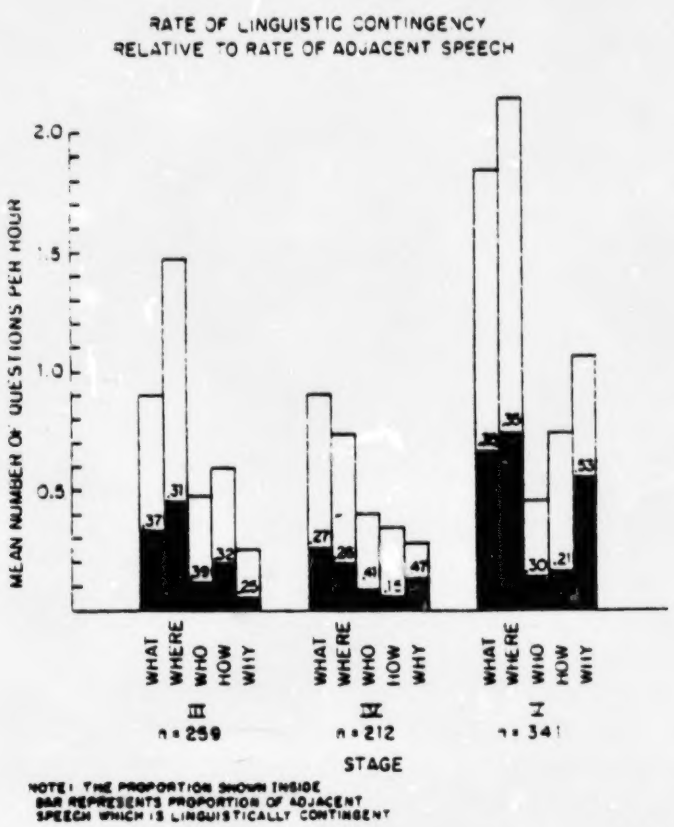


The discourse adjustments that the children made with respect to whether a verb was expressed were different for the different wh-forms; what, where and who questions presented a pattern of increasing verb ellipsis or shortened utterance length; how and why questions presented a pattern of increasing expansion of utterance length.

Linguistic contingency. For this analysis a subset of the corpus of wh-questions with verbs was examined for evidence of contingency. This subset consisted of those questions with verbs (except for the copula) that were temporally adjacent to a prior utterance in connected discourse. A child's utterance was contingent if it shared any constituent or referent of a constituent with an adult utterance that occurred within five turns in connected discourse.

Because of the substantial differences among the wh-questions in relative frequency, and the fact that observation sessions varied in duration from 5 to 8 hours, the rate of adjacent speech and the rate of linguistic contingency per hour was determined. In terms of absolute frequency, what and where questions were the most frequent questions and also presented the highest rates of adjacency and contingency. This result can be seen in Figure 4, where the rate of linguistic contingency

Figure 4

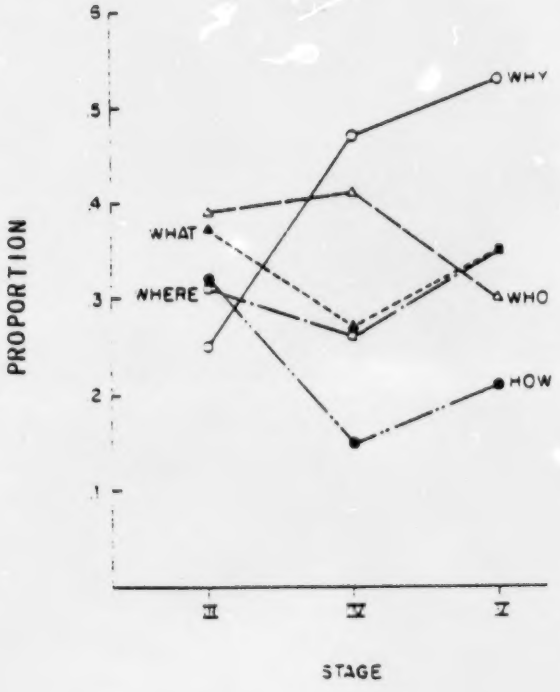


relative to the rate of adjacent speech per hour is averaged for the seven children. However, when the relative proportion of adjacent questions that were contingent for each of the wh-forms was considered, it was observed that why questions showed the highest proportion of linguistic contingency; how questions showed the lowest proportion of contingency and only about one-third of the what, where and who questions were con-

tingent. These proportions are indicated in each of the bars in the Figure 4 histogram, and are plotted in the graph in Figure 5 below. Thus, given that a child asked any wh-question, it was most likely to be a what or where question and given that a child asked a linguistically contingent question, it was still most likely to be a what or where question in terms of absolute frequency. But, given that a child asked a why question, that question was more likely to be linguistically contingent than if the child were to ask any other kind of wh-question.

Figure 5

LINGUISTIC CONTINGENCY: PROPORTION OF ADJACENT QUESTIONS WITH VERBS THAT ARE LINGUISTICALLY CONTINGENT

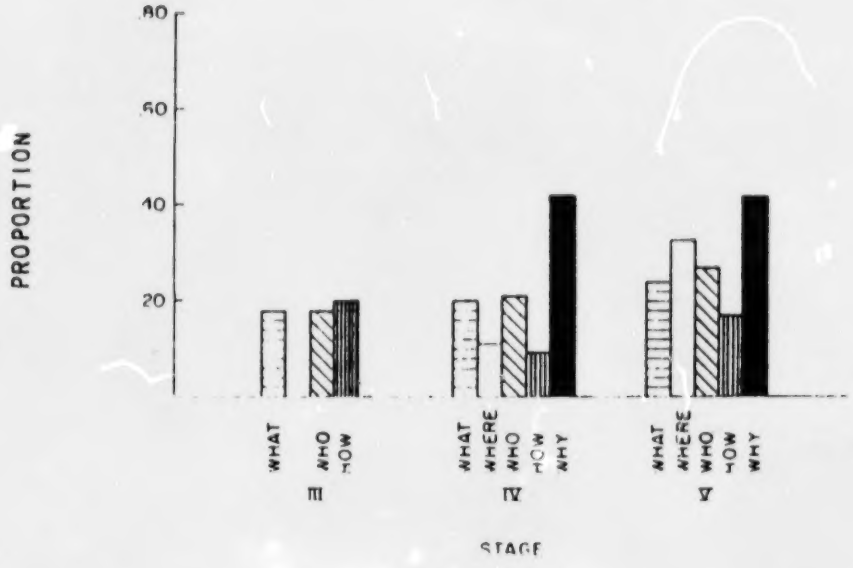


Verb cohesion. In this final analysis, we wished to explore the relationships among (1) the relative amount of linguistic contingency, (2) the relative use of descriptive verbs and (3) the degree to which the child's question shared the verb from an immediately prior adult utterance, for each wh-form. By clarifying these relationships, we hoped to better account for the differences among the different wh-forms in relative linguistic contingency and use of descriptive verbs. In particular, why questions were proportionately most contingent and occurred most frequently with descriptive verbs, so that it was hypothesized that the source of the descriptive verbs in why questions was a prior adult utterance.

All of the adjacent questions with descriptive verbs were examined, and the proportion of questions that shared verbs, or verb cohesion, is presented in Figure 6. For all of the question forms except how, there

Figure 6

VERB COHESION: PROPORTION OF QUESTIONS WITH DESCRIPTIVE VERBS WHERE VERB IS REPEATED FROM ADULT UTTERANCE



was an increase from Stage III to Stage V in the extent to which children made use of descriptive verbs from the adult discourse context. Further, wh-questions shared the adult verb more frequently than any other wh-question, but only about .40 of the time. How-questions, on the other hand, with the second most frequent use of descriptive verbs, displayed the least amount of verb cohesion with the adult utterance at Stages IV and V.

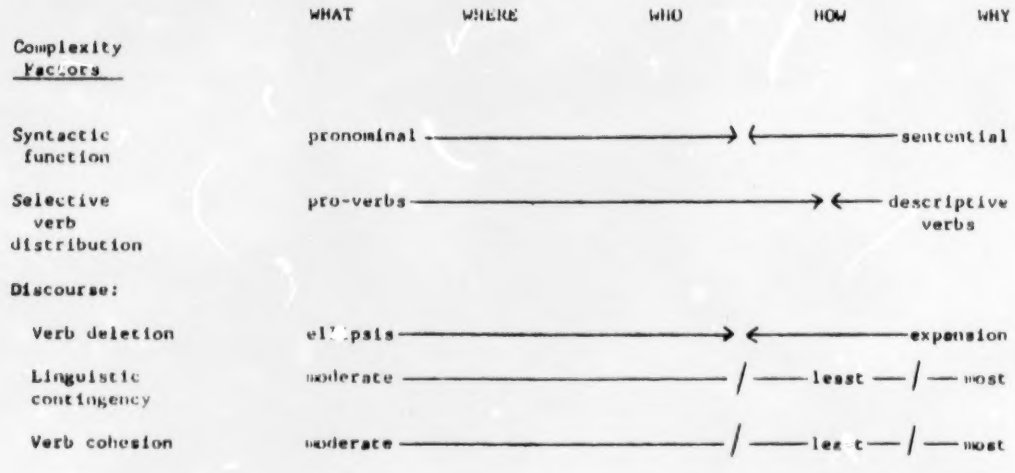
Thus, it was the case that verb cohesion was different among the wh-forms. As expected, verb cohesion was greatest with why-questions which were also most often linguistically contingent, indicating that the source of linguistic contingency was the verb relation in the prior adult utterance. The children were learning to ask why-questions with many descriptive verbs, in the context of contingency relations with the adult utterances in which they tended to repeat the verb from the adult utterance. However, a large number of descriptive verbs occurred with how, but how showed the least verb cohesion, indicating that the children were not depending only upon the linguistic context for the source of their use of descriptive verbs. It appears, then, that shared verbs in discourse is only a part of the explanation of the differential occurrence of descriptive verbs with wh-forms. Since why and how functioned differently in discourse, it can be assumed that the use of descriptive verbs is also a function of the meaning and structure of the different wh-forms themselves.

In conclusion, cognitive complexity may be one factor that operates to influence the sequence of acquisition of wh-forms, to be sure. However, the cognitive hypothesis is only a post hoc explanation that is, as yet, unsupported by independent evidence and, in fact, there is evidence to refute it. For example, when the children learned complex sentences, causal and temporal interclausal meaning relations and the syntactic connectives that encode them are among the most frequent meaning relations and connectives. Moreover, they appear early, well before three years of age and well before the acquisition of why and when questions (Bloom, Lahey, Hood, Lifter and Fiess, 1980). Furtner, children learning a second language at age five or six acquire wh-questions in precisely the same order as has been observed in first language learning (Lightbown, 1977). Cognitive development, then, could not be the factor that determines sequence of acquisition in a second language for a five-year-old child who already has the conceptual ability to ask all of the same questions in a first language.

Different wh-questions do not differ only in their conceptual requirements; rather, there are a number of factors that interact with one another and, together, produce the contrast among the wh-questions that determines their sequence of acquisition. Several of these factors are schematized in Figure 7 below. For example, what and why questions contrast with one another in at least the following ways: what, which emerges early, is a pronominal form that replaces a sentence constituent, occurs more frequently with pro-verbs than descriptive verbs, increases in frequency of ellipsis, and occurs with moderate linguistic contingency and verb cohesion. In contrast, why, which emerges late, is a sentential form, occurs far more frequently with descriptive verbs than pro-verbs, expands in sentence length and occurs with the greatest proportion of linguistic contingency and verb cohesion.

Figure 7

Order of Emergence



The results of the present study provide substantial support for the integrative model of language acquisition presented in Bloom, Miller and Hood (1975) and Bloom (1976), that is, there is no single factor that can explain the substance and process of language development. While children do learn to ask wh-questions in a particular order, they are doing so in the context of learning other aspects of language such as the syntactic functions of the wh-words, semantic aspects of verbs and the requirements of discourse. There are, then, multiple factors that, together, determine when and how children learn to ask the different forms of wh-questions.

References

Bloom, L. An integrative perspective on language development. Keynote Address, Eighth Annual Forum on Child Language Research, Stanford Department of Linguistics, Stanford University, 1976.

Bloom, L., Lahey, M., Hood, L., Lifter, K. and Fiess, K. Complex sentences: Acquisition of syntactic connectives and the semantic relations they encode. Journal of Child language, in press.

Bloom, L., Miller, P. and Hood, L. Variation and reduction as aspects of competence in child language. In A. Pick (Ed.), Minnesota Symposia on Child Psychology, Vol. 9. Minneapolis: The University of Minneapolis Press, 1975.

Brown, R. A first language: the early stages. Cambridge, Massachusetts: Harvard University Press, 1973.

Ervin-Tripp, S. Discourse agreement: How children answer questions. In J. Hayes (Ed.), Cognition and the development of language. New York: Wiley, 1970.

Lightbown, P. French L2 learners: What they're talking about. Language Learning, 1977, 27, 371-381.

Smith, M. The influence of age, sex and situation on the frequency, form and function of questions asked by preschool children. Child Development, 1933, 4, 201-213.

Tyack, D. and Ingram, D. Children's production and comprehension of questions. Journal of Child Language, 1977, 4, 211-224.

Wootten, J., Merkin, S., Hood, L. and Bloom, L. Wh-questions: Linguistic evidence to explain the sequence of acquisition. Paper presented to the Biennial Meeting of the Society for Research in Child Development, San Francisco, California, March 16, 1979.